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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,727	04/02/2004	John D. Brennan	571-933	9476

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EXAMINER	
JUNG, UNSU	
ART UNIT	**PAPER NUMBER**
1641	

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/815,727	BRENNAN ET AL.	
	Examiner	Art Unit	
	Unsu Jung	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) *26-49* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☒ Claim(s) *5 and 15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

8.00

DETAILED ACTION

1. Applicants' amendment to the claims filed on June 17, 2005 canceling claims 26-49 has been acknowledged and entered.

Election/Restrictions

2. Applicant's election of Group I (claims 1-25) in the reply filed on June 17, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

3. The drawings are objected to because Figure 20 is missing an x-axis label and Figure 22 has the x-axis label overlapping the bar graph. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement

sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 5 is objected to because of the following informalities: the word "a" in line 3 should be deleted. Appropriate correction is required.

5. Claim 15 is objected to because of the following informalities: the word "of" is needed following the word "presence" in line 2. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 10-13 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 10 recites the limitation "the lipid" in line 1. There is insufficient antecedent basis for this limitation in the claim.

9. In claim 11, the phrase "about 4-11.5" in lines 5-6 is vague and indefinite. The phrase "about 4-11.5" does not clearly define the metes and bounds of the claim limitation.

10. In claim 12, the phrase "optionally comprising" is vague and indefinite. It is not clear whether a humectant should be present in the aqueous buffer.

11. In claim 25, the phrase "about 4-227" in line 4 is vague and indefinite. The phrase "about 4-227" does not clearly define the metes and bounds of the claim limitation.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 7, 9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Stowell et al. (U.S. Patent No. 6,284,163, Sep. 4, 2001).

Stowell et al. anticipates instant claims by teaching a method of immobilizing membrane-associated molecules in silica matrixes comprising combining a liposome-assembly, which includes the membrane associated molecule (column 3, lines 59-64), with a protein- and membrane-compatible sol-gel precursor under conditions to allow a gel to form (column 3, lines 18-30).

With respect to claim 7, Stowell et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the membrane-associated molecule is bacteriorhodopsin (column 5, Example 7).

With respect to claim 9, Stowell et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes comprising combining a liposome-assembly, wherein the liposome includes phospholipids (Abstract, lines 1-3).

With respect to claim 11, Stowell et al. teaches a method comprising the steps of:

(i) combining an aqueous solution of the protein and membrane-compatible, sol gel precursor with an aqueous solution of a liposome assembly comprising the membrane-associated molecule (column 5, lines 44-49 and Example 7);

(ii) adjusting the pH of the combination of (i) so that it is in the range of about 4-11.5 (column 5, lines 57-58);

(iii) shaping the combination into a desired shape (column 5, lines 54-57);

(iv) allowing the combination to gel (column 5, lines 67-68);

(v) aging and partially drying the gel (column 5, lines 59-60).

With respect to claims 15, 16, and 24, Stowell et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein one or more

additives is selected from one or more compounds of formula I (column 2, line 55-column 3, line 6).

14. Claims 1-4, 7, 11 and 14-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421).

Gill anticipates instant claims by teaching a method of immobilizing membrane-associated molecules in silica matrixes comprising combining a liposome-assembly, which includes the membrane associated molecule (p3406, *General Considerations for the Encapsulation of Biomolecular Structures*, column 1, lines 40-45), with a protein- and membrane-compatible sol-gel precursor under conditions to allow a gel to form (pp3404, Abstract).

With respect to claims 2-4, Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the protein- and membrane-compatible sol-gel precursor is an organic polyol silane (alkoxy-silanes mixed with an organic polyol such as glycerol, p3407, Figure 1).

With respect to claim 7, Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the membrane-associated molecule is bacteriorhodopsin (p3415, Table 4).

With respect to claim 11, Gill teaches a method comprising the steps of:

(i) combining an aqueous solution of the protein and membrane-compatible, sol gel precursor with an aqueous solution of a liposome assembly comprising the membrane-associated molecule;

(ii) adjusting the pH of the combination of (i) so that it is in the range of about 4-11.5;

(iii) shaping the combination into a desired shape;

(iv) allowing the combination to gel;

(v) aging and partially drying the gel.

With respect to claim 14, Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the membrane-associated molecule and the protein and membrane-compatible, sol-gel precursor are combined in the presence of an indicator molecule and/or in the presence of one or more ligands for the membrane-associated molecule (p3415, column 1, lines 1-5).

With respect to claims 15-19, Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes further comprising combining the liposome assembly and sol-gel precursor in the presence of one or more additives such as polyethylene glycol (p3407, Figure 1).

15. Claims 1-6, 9, and 14 are rejected under 35 U.S.C. 102(a) as being anticipated by Besanger et al. (*J. Phys. Chem. B*, Published on Web Sept. 20, 2002, Vol. 106, pp10535-10542).

Besanger et al. anticipates instant claims by teaching a method of immobilizing membrane-associated molecules in silica matrixes comprising combining a liposome-assembly, which includes the membrane associated molecule, with a protein- and membrane-compatible sol-gel precursor under conditions to allow a gel to form (p10535, *Introduction*, column 1, line 25-p10536, line 21).

With respect to claim 2, Besanger et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the protein- and membrane-compatible sol-gel precursor is an organic polyol silane or a sodium silicate (p10536, *Introduction*, column 1, lines 22-25).

With respect to claims 3-6, Besanger et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the organic polyol silane precursor is diglycerylsilane (p10536, *Introduction*, column 1, lines 22-25).

With respect to claim 9, Besanger et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the liposome is a phospholipids (p10536, *Methods*, *Entrapment of Liposomes*, column 2, lines 1-3).

With respect to claim 14, Besanger et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes, wherein the membrane-associated molecule and the protein and membrane-compatible, sol-gel precursor are combined in the presence of an indicator molecule and/or in the presence of one or more ligands for the membrane-associated molecule (*Abstract*).

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

19. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Besanger et al. (*J. Phys. Chem. B*, Published on Web Sept. 20, 2002, Vol. 106, pp10535-10542) in view of Stowell et al. (U.S. Patent No. 6,284,163, Sep. 4, 2001).

Besanger et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Besanger et al. fails to teach the use of membrane-associated molecule selected from gramicidin, bacteriorhodopsin, acetylcholine receptor, and ionomycin.

Stowell et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes using bacteriorhodopsin (column 5, Example 7). Biological macromolecules catalyze specific reactions in biological systems. This makes them desirable reagents with a host of applications (column 1, lines 17-19). For membrane proteins that require a hydrophobic environment, it is preferable to entrap the protein in a lipid membrane and then encapsulate the protein and lipid membrane with a sol-gel (column 3, lines 59-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Besanger et al. with membrane-associated molecules such as bacteriorhodopsin as taught by Stowell et al. in order for a use in a host of biological applications.

20. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stowell et al. (U.S. Patent No. 6,284,163, Sep. 4, 2001) in view of Dattagupta et al. (Patent No. 5,711,964, Jan. 27, 1998).

Stowell et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Stowell et al. fails to teach the use of

lipid comprising 1,2-dioleoyl-sn-glycero-3-phosphocholine (DOPC) in liposome assembly.

Dattagupta et al. teaches that an amphiphile such as DOPC (column 6, line 26 and column 12, lines 33-38) is used to form a liposomal vesicle (column 6, lines 45-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Stowell et al. with an amphiphilic DOPC as taught by Dattagupta et al. in order to construct liposomal vesicles.

21. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Besanger et al. (*J. Phys. Chem. B*, Published on Web Sept. 20, 2002, Vol. 106, pp10535-10542) in view of Dattagupta et al. (Patent No. 5,711,964, Jan. 27, 1998).

Besanger et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Besanger et al. fails to teach the use of lipid comprising 1,2-dioleoyl-sn-glycero-3-phosphocholine (DOPC) in liposome assembly.

Dattagupta et al. teaches that an amphiphile such as DOPC (column 6, line 26 and column 12, lines 33-38) is used to form a liposomal vesicle (column 6, lines 45-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Besanger et al. with an amphiphilic DOPC as taught by Dattagupta et al. in order to construct liposomal vesicles.

22. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stowell et al. (U.S. Patent No. 6,284,163, Sep. 4, 2001) in view Lapidot et al. (U.S. PG Pub. No. US 2002/0064541 A1, Filed Oct April 21, 2000) and Smith et al. (J. Am. Chem. Soc., Published on Web Mar. 28, 2002).

Stowell et al. teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Stowell et al. fails to teach the use of aqueous buffer, comprising about 5% to about 50% (v/v) of glycerol.

Lapidot et al. teaches that the disintegration of microcapsules prepared by sol-gel process is effected by drying. The drying of the microcapsules is effected by the evaporation of water, which leaves the microcapsules exposed to the environment and thus triggers their disintegration. Additives that are capable of maintaining humidity and moisture can be added during the sol-gel process to control the surface nature of the sol-gel matrix. Examples of humectants include glycerol.

Smith et al. teaches a method of encapsulating an enzyme using a sol-gel technique. During a gelation process, phosphate buffer comprising 10% glycerol was used during the wash step in order to remove the ethanol produced in the gelation reaction and during the aging and drying steps.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Stowell et al. with a use of humectant such as glycerol in a buffer solution as taught by Smith et al. to use during the drying

process as taught by Lapidot et al. in order to control the surface nature of the sol-gel matrix.

23. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421) in view Lapidot et al. (U.S. PG Pub. No. US 2002/0064541 A1, Filed Oct April 21, 2000) and Smith et al. (J. Am. Chem. Soc., Published on Web Mar. 28, 2002).

Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Gill fails to teach the use of aqueous buffer, comprising about 5% to about 50% (v/v) of glycerol.

Lapidot et al. teaches that the disintegration of microcapsules prepared by sol-gel process is effected by drying. The drying of the microcapsules is effected by the evaporation of water, which leaves the microcapsules exposed to the environment and thus triggers their disintegration. Additives that are capable of maintaining humidity and moisture can be added during the sol-gel process to control the surface nature of the sol-gel matrix. Examples of humectants include glycerol.

Smith et al. teaches a method of encapsulating an enzyme using a sol-gel technique. During a gelation process, phosphate buffer comprising 10% glycerol was used during the wash step in order to remove the ethanol produced in the gelation reaction and during the aging and drying steps.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Gill with a use of humectant such as

glycerol in a buffer solution as taught by Smith et al. to use during the drying process as taught by Lapidot et al. in order to control the surface nature of the sol-gel matrix.

24. Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421) in view Keeling-Tucker et al. (*Chem. Mater.*, Published on Web July 31, 2001, Vol. 13, pp3331-3350).

Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Gill fails to teach the use of polyethelene oxide (PEO), PEO-NH2, and poly NIPAM.

Keeling-Tucker et al. teaches a method of incorporating hydrophilic polymers within silicate materials with the silica sol (p3339, Hydrophilic Polymers, column 1, lines 1-5). The development of Class I materials generally involves the dispersion of hydrophobic, hydrophilic, or charged polymers or surfactants into sol-gel precursor materials during the hydrolysis step (p3338, *B. Materials with Dispersed Organic Additives (Class I Materials),* column 2, lines 2-6). Such materials can either interact with silica, thus modifying the properties of the solvent-silica interface, or can segregate into independent phases, resulting in unique structures such as interpenetrating polymer networks (p3338, *B. Materials with Dispersed Organic Additives (Class I Materials),* column 2, lines 6-11). The additive, PEO, was able to organize by hydrophobic interactions to provide a relatively large volume fraction of the organic

subphase (p3340, column 2, paragraph 4, line 11-p3341, column 1, paragraph 1, line 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Gill with the use of an additive, PEO, in order to provide segregation into independent phases prior to gelation.

25. Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421) in view of Leung et al. (Patent No. 6,204,202, Filed Apr. 14, 1999).

Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Gill fails to teach the use of polyethylene oxide (PEO), PEO-NH2, and poly NIPAM.

Leung et al. teaches a method for making silica nanoporous films (such as sol-gel) of sufficient mechanical strength that are also optimized to have a desirably low and stable dielectric constant, without the need for further processing to make the film hydrophobic (column 3, lines 19-26) by mixing a non-volatile thermally degradable polymer with an organic and/or inorganic silicon-based material (column2, lines 44-58 and column 3, lines 34-36). A useful nanoporous material must meet a number of criteria, including having a dielectric constant falling within the required value range, having a suitable thickness, having an ability of effectively fill gaps, and having an effective degree of hydrophobicity (column 2, lines 60-66). If the material is not strong

enough, despite achieving the other requirements, the pore structure may collapse, resulting in high material density, and therefore an undesirably high dielectric constant.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Gill with an additive (thermally degrading polymer such as PEO having a molecular weight ranging from about 200 to 2,000,000 Daltons, column 4, lines 16-22) as taught by Leung et al. in order to make silica nanoporous films (such as sol-gel) of sufficient mechanical strength that are also optimized to have a desirably low and stable dielectric constant, without the need for further processing to make the film hydrophobic.

26. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421) in view Delamarche et al. (*Langmuir*, Published on Web Sept. 11, 2003, Vol. 19, 8749-8758).

Gill teaches a method of immobilizing membrane-associated molecules in silica matrixes as discussed above. However, Gill fails to teach the use of an additive selected from compounds of Formula 5.

Delamarche et al. teaches the use of PEO silane onto a sol-gel polymer, poly(dimethylsiloxane) ink, resulting in a stable hydrophilic structure (p8755, 3. Conclusion, column 2, lines 1-6). The method of using PEO silane is simple and particularly effective when proteins are active molecules (p8755, 3. Conclusion, column 2, line 4-p8756, column 1, line 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of Gill with an additive of Formula 5 (p8751, Scheme 1, Formula 17) as taught by Delamarche et al. in order to provide a simple and effective means to construct a stable hydrophilic structure.

Claims 16, 24 and 25 are not supported by the disclosure in parent application (10/712,015). Therefore, the priority date of the parent application is not applicable for the claims 16, 24, and 25 and the above reference, Delamarche et al. meets the criteria for a prior art.

Double Patenting

27. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

28. Claims 1-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9, 15, 16, 37-39, 41, 42, 47, 49, and 51 of copending Application No. 10/647,174 in view of Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421).

Copending Application No.10/647,174 teaches a method of preparing siliceous materials comprising combining a sol-gel precursor (organic polyol silane), a biomolecule of interest and one or more additives under conditions which allow a gel to form. However, copending Application No.10/647,174 fails to teach a method incorporating a membrane-associated molecule.

Gill teaches method of encapsulation of proteins, which are part of assemblies such as bilayers, vesicles, and membranes in order to preserve the gross structural integrity and large-scale internal mobilities of these structures.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of the copending Application No. 10/647,174, a step of incorporating membrane associated molecules into bilayers, vesicles, or membranes as taught by Gill in order to preserve the gross structural integrity and large-scale internal mobilities of these structures.

This is a provisional obviousness-type double patenting rejection.

29. Claims 1-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9, 16, 37, 38, 39, 41, 42, 47, 49, and 51 of copending Application No. 10/814,123 in view of Gill (*Chem. Mater.*, Web Release Date of July 4, 2001, Vol. 13, pp3404-3421).

Copending Application No. 10/814,123 teaches a method of preparing siliceous materials comprising combining a sol-gel precursor (organic polyol silane), a

biomolecule of interest and one or more additives under conditions which allow a gel to form. However, copending Application No. 10/814,123 fails to teach a method incorporating a membrane-associated molecule.

Gill teaches method of encapsulation of proteins, which are part of assemblies such as bilayers, vesicles, and membranes in order to preserve the gross structural integrity and large-scale internal mobilities of these structures.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method of the copending Application No. 10/647,174, a step of incorporating membrane associated molecules into bilayers, vesicles, or membranes as taught by Gill in order to preserve the gross structural integrity and large-scale internal mobilities of these structures.

This is a provisional obviousness-type double patenting rejection.

Conclusion

30. No claims allowed.

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Unsu Jung whose telephone number is 571-272-8506. The examiner can normally be reached on M-F: 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Unsu Jung, Ph.D.
Patent Examiner
Art Unit 1641

CHRISTOPHER L. CHIN
PRIMARY EXAMINER
GROUP ~~1800~~ 1641
7/8/05